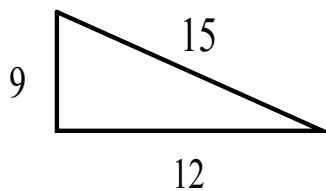


## 4.5 The Converse of the Pythagorean Theorem

Is the triangle a right triangle?



yes

$$15^2 \stackrel{?}{=} 9^2 + 12^2$$
$$225 = 81 + 144$$
$$= 225$$

Nov 13-10:51 AM

If  $c^2 = a^2 + b^2$ , then the triangle is a right triangle.

If  $c^2 > a^2 + b^2$ , then the triangle is an obtuse triangle.

If  $c^2 < a^2 + b^2$ , then the triangle is an acute triangle.

c is the longest side

Nov 13-10:55 AM

What type of triangle is represented by the given sides?

Examples:

3, 5, 7  
Obtuse

$$7^2 \quad \text{?} \quad 3^2 + 5^2$$

$$49 \quad \quad 9 + 25$$

$$34$$

7, 7, 7  
Acute

$$7^2 \quad \text{<} \quad 7^2 + 7^2$$

$$49 \quad \quad 49 + 49$$

$$98$$

10, 12, 6  
Obtuse

$$12^2 \quad \text{>} \quad 6^2 + 10^2$$

$$144 \quad \quad 36 + 100$$

Nov 13-10:56 AM

15, 20, 25  
Right

$$25^2 \quad \text{=} \quad 15^2 + 20^2$$

$$625 \quad \quad 225 + 400$$

$$625$$

9, 7, 11

Acute

10, 24, 30

Nov 13-10:57 AM

Write this!

★ The Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Ex:  
D(1, 4)  
E(3, -2)

$$= \sqrt{(1-3)^2 + (4-(-2))^2}$$

$$\sqrt{4 + 36}$$

$$= \sqrt{40}$$

$$DE = \boxed{2\sqrt{10}}$$

Nov 13-11:08 AM

J(-1, 7)  
K(5, -1)

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(-1-5)^2 + (7-(-1))^2}$$

$$36 + 64$$

$$= \sqrt{100}$$

$$JK = 10$$

Nov 13-11:12 AM

**HW**

p197      27-29 Do not round.

p204      18-23, 25-30

Nov 13-11:12 AM